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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,017	11/26/2003	Reginald W. Clark	NOVTR.002A	7554

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EXAMINER	
MCKANE, ELIZABETH L	
ART UNIT	**PAPER NUMBER**
1744	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/23/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/23/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/724,017	CLARK	
	Examiner	Art Unit	
	Leigh McKane	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-82* is/are pending in the application.

4a) Of the above claim(s) *32-38 and 40-82* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31 and 39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10012004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Election/Restrictions

1. Claims 32-38 and 40-82 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 3 January 2007.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 8, 11, 13, 16, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Bigelow (US 6,500,387).

Bigelow teaches a UV flux multiplying air sterilization chamber **34**. The chamber **34** has a parallelpiped shape and includes a plurality of reflective inner surfaces (col.5, lines 38-50), UV lamps **50** positioned within the chamber, and in inlet and outlet for air. See Figure 4. The surfaces can achieve reflectivity of up to 95% (col.11, lines 33-36) when Alzak is employed. The inlet and outlet apertures each include light reflecting fibers (aluminum and aluminum oxide fibers) and a frame for housing the reflecting fibers, wherein air flows through the inlet and outlet apertures. See Figures 4 and 5; col.14, lines 24-27.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 5, 7, 20, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bigelow.

With respect to claim 5 and the shape of the air sterilization chamber, Bigelow teaches a

parallelpiped chamber. Regardless, there is no evidence that the shape of the chamber is particularly significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for the purposes of space considerations and esthetics. See In re Dailey, 149 USPQ 47 (CCPA 1976).

As to claim 5, Bigelow discloses that the reflective surfaces may be coated with magnesium oxide (col.11, lines 30-31) or aluminum oxide (col.14, lines 2-6). Although not teaching how the coating is accomplished, it would have been obvious to one of ordinary skill in the art to coat the surfaces using art-recognized means, such as mixing the oxide with a binder.

With respect to claim 20, the Examiner submits that the optimization of pressure drop within an air purifier is readily known and determinable to one of ordinary skill in the art for purposes of preventing unwanted stress on the system components, especially the blower.

As to claim 31, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of reflective surfaces in order to optimize UV flux within the chamber.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bigelow in view of McGregor et al. (US 5,689,364).

Bigelow discloses using a variety of reflective materials but does not teach the use of expanded PTFE. McGregor et al. teaches that it was known in the art at the time of the invention to employ expanded PTFE (ePTFE) as a UV reflective surface in irradiation chambers and that the irradiation chamber can be one for sterilization. See col.2, lines 17-42. As McGregor et al. discloses that ePTFE has a UV reflectance of greater than 95% (col.3, lines 45-47), it would have been an obvious replacement for both the polished aluminum and Alzak.

9. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bigelow in view of Goebel et al. (US 6,730,141).

Bigelow discloses a UV light located within the chamber. See Figures. Goebel et al., however, evidences an air purifier wherein the UV source **10** irradiates the air within chamber **6a** through a window **11**. See col.5, lines 6-16; col.6, lines 34-35; Figure 2. As placing the UV lamp outside the chamber protects the lamp from cooling by the air moving therethrough, as well as, from deposits, it would have been obvious to move the lamp of Bigelow to the exterior of the chamber. Furthermore, as to using quartz for the window **11** of Bigelow, one would have found it obvious to employ a UV transmissive material, and quartz is a well-known UV transmissive material.

10. Claims 12, 14, 15, 21-30, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bigelow in view of Morrow et al. (US 6,589,489).

With respect to claims 12, 14, 15, 21-29, Bigelow is silent with respect to use of a non woven fabric for the filters. Morrow et al. discloses an air purifier having reflective surfaces within the chamber, on the filters and on a dielectric body. The filters may be mesh, like those of Bigelow, or may be non-woven (i.e. fused UV reflecting grains or aerogel matrices). See col.8, lines 12-18. Since Morrow et al. evidences that non-woven substrates are functional equivalents of the mesh filters of Bigelow, it would have been obvious to the skilled practitioner to substitute one for the other in the invention of Bigelow.

Furthermore, Morrow et al. discloses other UV reflective materials from which to fabricate the dielectric. These materials include quartz fibers (col.4, line 52) and reflective coatings such as magnesium fluoride on reflecting surfaces or aluminum oxide on aluminum

fibers. See col.4, lines 46-51. As set forth above, it is deemed obvious for one of ordinary skill in the art to substitute one of the many known UV reflective materials for another in the invention of Bigelow and to choose appropriate size fibers and particles to optimize reflectance and air filtration.

As to claim 30, the Examiner submits that the optimization of pressure drop within an air purifier is readily known and determinable to one of ordinary skill in the art for purposes of preventing unwanted stress on the system components, especially the blower.

With respect to claim 38, Morrow et al. evidences a narrowed intake plenum **18** and expansive exhaust plenum **62**. The use of aerodynamically shaped inlet and outlet plenums is well-known in the art of air treatment and would have been obvious in Bigelow.

11. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bigelow and Morrow et al. as applied to claim 12 above, and further in view of Bergman (US 4,687,579).

Bigelow with Morrow et al. is silent with respect to strengthening members or pleating in the non-woven filter. Bergman discloses a sintered (i.e. nonwoven) particulate air filter wherein quartz fibers are strengthened with steel fibers (wire). See col.4, lines 26-29. The filter may be pleated (col.3, lines 56-68). As the sintered quartz filter of Bergman would have had the reflective and high-efficiency air filtration properties taught by Bigelow, it would have been obvious for one of ordinary skill in the art to choose the filter of Bergman for use in the sterilization chamber of Bigelow with Morrow et al..

12. Claims 1, 2, 5, 7, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morrow et al. in view of Bigelow.

Morrow et al. teaches a cylindrical UV flux multiplying sterilization chamber (col.8, lines

30-31) having a plurality of reflective inner surfaces, in inlet aperture (inner surface of **66**), an outlet aperture (outer surface of **68**), and a UV light source **46** within the chamber. Morrow et al. does not disclose the reflectivity of the reflective surfaces but does disclose that the reflective surfaces may be fabricated from aluminum coated with aluminum oxide or magnesium fluoride (col.3, line 64 to col.4, line 2), both of which have a high reflectivity. Bigelow discloses that reflective surfaces having up to 95% reflectivity. See col.11, lines 33-36. It would have been obvious to substitute the reflective material of Bigelow for that of Morrow et al. in order to achieve the high reflectivity disclosed by Bigelow since doing so would have improved the air purification of Morrow et al.. Morrow et al. further discloses that the inlet and outlet apertures may be fabricated from reflective fibers (col.4, lines 39-53). While Morrow et al. does not expressly state that these fibers are provided in non-woven form, it seems apparent to the skilled practitioner that they would be as this is the common form of fibrous filtering materials. Moreover, it is further deemed obvious to provide a support for the fibrous materials, such as a frame and housing, in order to prevent their movement.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leigh McKane whose telephone number is 571-272-1275. The examiner can normally be reached on Monday-Friday (5:30 am-2:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on 571-272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leigh McKane

Leigh McKane
Primary Examiner
Art Unit 1744

elm
19 March 2007